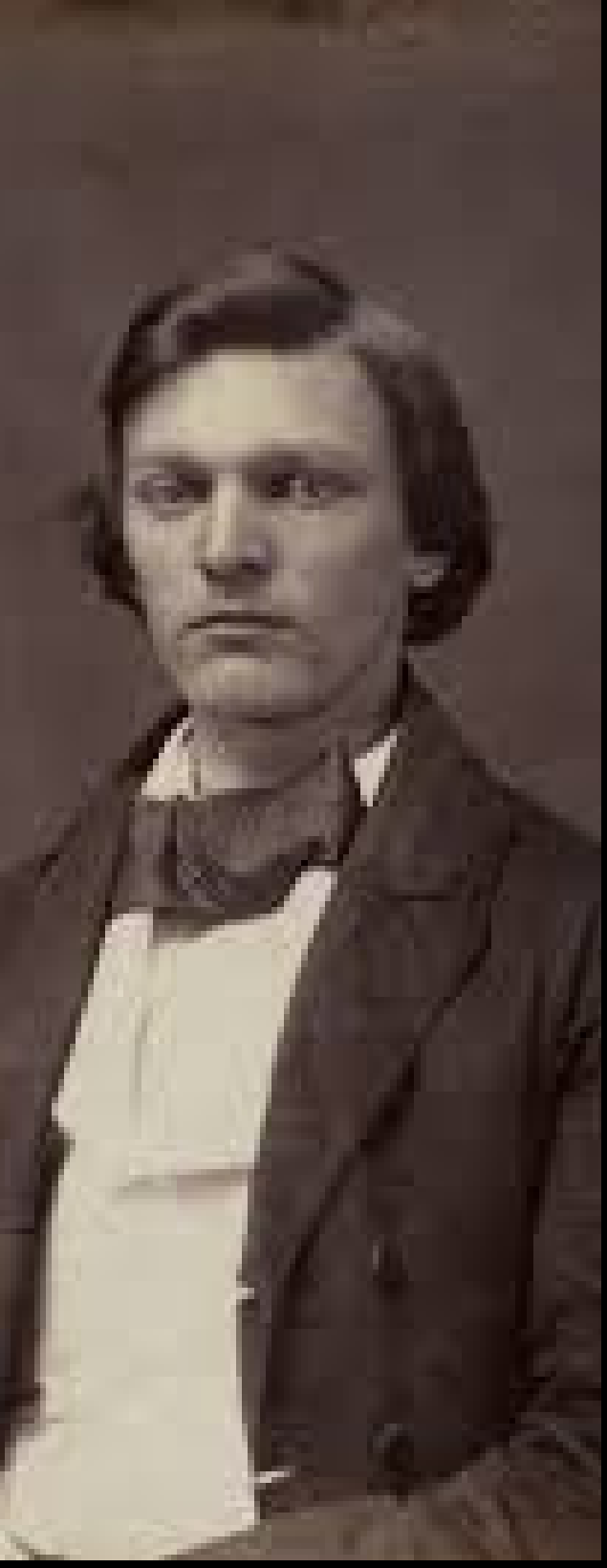
# WASHINGTON ROEBLING: THE PARALYZED ENGINEER WHO BUILT THE BROOKLYN BRIDGE

The Brooklyn Bridge is a monumental feat in engineering history. Yet, the bridge cannot overshadow the chief engineer who built it: Washington Roebling. Despite his disability, he continued constructing the Brooklyn Bridge until its completion.

Roebling's determination accomplished what many think was impossible. Like many grand visions, the planned construction of the Brooklyn Bridge met opposition. Several city officials considered a bridge over Brooklyn a construction nightmare.



**INSIGHT 2.0**

Building planners and engineers confronted hard facts. The East River is salt water and not a river. Since it is so, its inlet is sensitive to turbulence and severe tidal conditions.

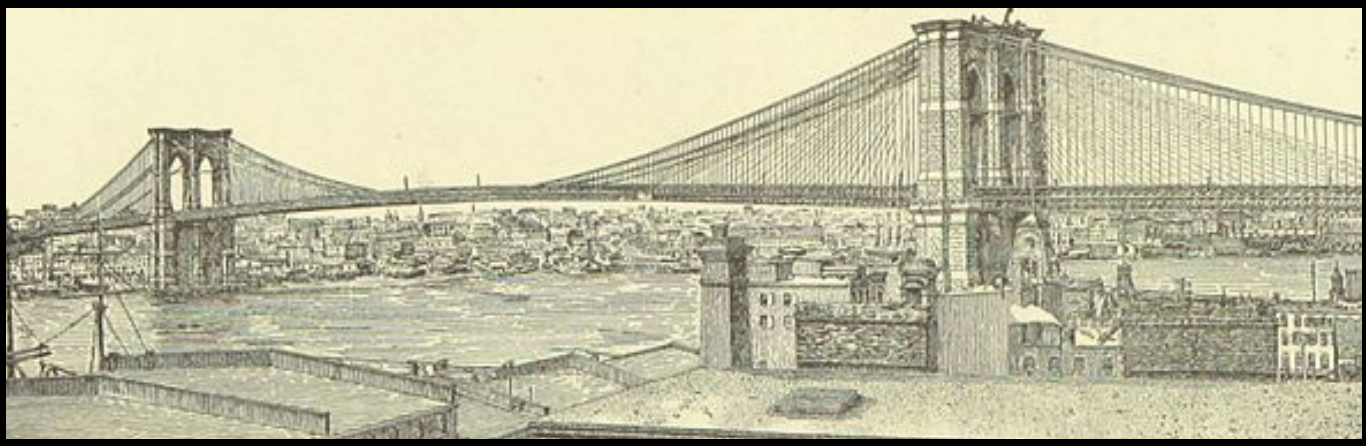
The exposure of the builders to water and wind brought life-threatening risks. Additionally, hundreds of ships and boats passed through the river every day. The bridge had to be tall enough to allow sea vessels to sail beneath it. Brooklyn Bridge's length and width posed as their most challenging problem.

The projected crossing between Brooklyn and Manhattan was approximately 1.8 kilometers. Critics stated that the entire infrastructure might collapse due to its immense weight. Yet, the city council prevailed. They designated John Roebling as the chief engineer of the bridge construction.

John Roebling was a German immigrant to the United States. Later, he gained a reputation as one of the finest bridge builders of his day.

Unfortunately, a tragedy happened when the bridge's construction started. John Roebling's foot got wounded and led to an eventual leg amputation. He died due to a tetanus infection shortly after the operation. Before his demise, he delegated the bridge's construction to his 32-year-old son, Washington.

**Yet, Washington refused to give up and showed unfaltering determination. He decided to continue leading the bridge's construction from his bed.**



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Like his father, Washington was an outstanding bridge builder. He had constructed bridges over the Allegheny River and Ohio River. In his plan, Washington's required 11-inch steel cables to hang the bridge from the towers. The infrastructure relied on those steel cables for support and has a total weight 120,000,000 pounds.

Unexpected problems arose when a fraudulent contractor acquired low-quality cables. Thus, Washington had to use six times as many steel cables to support the infrastructure.

The engineers built 'caissons' during the construction. They were enormous concrete containers that pumped out water and mud. Workers inside the caisson developed a condition known as Caisson's Disease. Workers suffer acute decompression when they return to normal air pressure.

Washington succumbed to Caisson's illness and fell into paralysis. His poor health forced him to stay home, confined to his bed. He could have abandoned his work - he had many valid excuses not to continue. What more could a paralyzed chief engineer do for such a Herculean task?

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Washington gave his wife, Emily Warren Roebling, a crash course in bridge engineering. She learned construction mathematics, curve calculations, material strengths, bridge specifications, and engineering principles.

As a chief proxy engineer, Emily supervised the daily building operations. She served as the vital link between Washington and onsite supervisors. The couple worked this way for eleven years until the completion of the Brooklyn Bridge in 1883.

"Nowhere in the history of great endeavors is anything equal to Roebling. Managing the greatest and most demanding engineering project ever 'in absentia," wrote a historian.

On May 24, 1883, the city staged the grand opening of the Brooklyn Bridge. US President Chester Arthur, New York Mayor Franklin Edson, Brooklyn Mayor Seth Low, and dignitaries, along with hundreds of citizens, attended the inauguration. The mayor granted Emily Roebling the honor of being the first to cross the Brooklyn Bridge. President Arthur visited Washington in his home to congratulate him.

Remember the engineer and his wife who built the Brooklyn Bridge when things get tough. The Roeblings have shown what commitment, perseverance, and commitment can accomplish.

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**A hundred excuses for giving up will not justify giving up.**